

REPORT TO CONGRESS

ANNUAL REPORT TO CONGRESS

THE FOREIGN COMPARATIVE TESTING (FCT) PROGRAM

FOR FISCAL YEAR 1994

OFFICE OF THE UNDER SECRETARY OF DEFENSE

(ACQUISITION AND TECHNOLOGY)

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FOREWORD

The Foreign Comparative Testing (FCT) Program is vital to supporting the U.S. policy of international armaments cooperation. The FCT Program reduces overall Department of Defense (DoD) acquisition costs by facilitating the procurement of nondevelopmental items (NDI). At the same time, it strengthens U.S. relationships within the international community.

The FCT Program evaluates defense items of allied and other friendly nations to determine whether these items can satisfy DoD requirements or correct mission area shortcomings. Foreign alternatives stimulate competition, strengthens the U.S. economy and industrial base.

The FCT process is straightforward. Each year the Departments of the Army, Navy, and Air Force nominate projects to the Office of the Secretary of Defense (OSD) for FCT consideration. The OSD staff screens the proposals to ensure that the Services have (1) advocated NDI that address valid requirements, (2) completed

thorough market surveys, and (3) developed viable Service acquisition strategies.

The OSD staff prioritize proposals meeting these criteria and forwards the project list to Congress for approval. The sponsoring Services then obtain, test, and evaluate items for the approved projects. The OSD staff establishes FCT funding priority based on the demonstrated potential of foreign equipment to satisfy U.S. requirements with little or no modification.

The FCT Program has a solid history of success and holds the promise of even greater success in the future through the reduction of development times and costs for the military, which ultimately benefit the U.S. taxpayer. For DoD, the FCT Program has consistently reduced acquisition costs. In the private sector it has served as a catalyst for industry teaming arrangements; this is productive for both U.S. and foreign industries in this increasingly competitive world market. This report for 1994 provides an overview of the FCT Program and highlights its achievements.

Paul G. Kaminski

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OVERVIEW OF THE FOREIGN COMPARATIVE TESTING PROGRAM

The Foreign Comparative Testing (FCT) Program responds to growing awareness of the potential value of using nondevelopmental items (NDI) to accelerate the acquisition process and to cut rising development costs. The FCT Program was authorized by Congress in 1989. It consolidates two earlier programs: the Foreign Weapons Evaluation (FWE) Program and NATO Comparative Test Program (widely known as NATO "side-by-side" testing). The FCT Program tests and evaluates nondevelopmental defense equipment produced by allies and other friendly countries to determine whether items satisfy the Department of Defense (DoD) requirements or address mission area shortcomings. The objectives are to reduce research, development, test and evaluation (RDT&E) expenditures by--

- o Enhancing standardization and interoperability.
- o Improving cooperative support.
- o Promoting competition.
- o Eliminating unnecessary duplication.

The Services nominate candidate projects each year.

The highest priority for funding is given to projects that test and evaluate. The next level pf priority is then given to projects that include foreign equipment or technologies that can be applied to the production or improvement of an identified U.S. military system.

Approved projects are normally funded for 1 or 2 years.

The FCT Program has experienced unqualified success. Since its inception, the United States has procured nearly \$3 billion worth of NDI through the FCT program. By the end of FY 1994, 275 FCT projects and 63 procurements were completed. In the process, the United States--

- o Avoided the costs of new start developmental programs.
- o Realized cost savings due to foreign competition.
- o Experienced the rapid fielding of equipment.
- o Contributed to international defense cooperation.
- o Created international industrial teaming opportunities.

These benefits constitute the foundation for a robust cost-saving program that improves the capabilities of the U.S. warfighter.

The FCT Program is congressionally mandated in Title 10, United States Code, Section 2350. Further guidance is found in Part 210, DoD FAR Supplement, and sections of DoD Instruction 5000.2, which address the acquisition and distribution of commercial products. FCT projects are

nominated in accordance with the FCT Procedures Manual,

DoD 5000.3-M-2.

FCT PROGRAM ACHIEVEMENTS

The FCT Program saves valuable RDT&E and procurement funds. The Department of Defense realizes enormous cost savings from a relatively small investment of taxpayer dollars. There are other benefits as well, for example, the lessons learned from testing and evaluating foreign systems.

In evaluating foreign systems, DoD gains valuable knowledge of the system's design, engineering, and operational characteristics. Source Selection Evaluation Boards have the opportunity to choose the very best from the defense marketplace by comparing costs and benefits of existing U.S. and competing foreign systems. Beyond this, the open test and evaluation (T&E) of foreign acquisition alternatives stimulates competition among domestic and foreign vendors. The advantage to DoD (and ultimately the warfighter) is the timely fielding of the best available military equipment at the most affordable cost.

IMPROVED COMBAT CAPABILITIES FOR U.S. FORCES VIA PROCUREMENTS

An important goal of the FCT Program is to provide improved combat capabilities to U.S. military forces. Some of the significant programs that have achieved this goal are outlined below:

SPOT Satellite Digital Imagery. The French SPOT satellite system collected digital imagery to assist Air Force mission planning for Desert Storm operations in

1991. Air Force after-action reports cited the FCT SPOT data as the only real-time images available to pilots before air strike missions were launched.

Ranger Antiarmor Weapon System (RAAWS). RAAWS is a lightweight Swedish weapon system that fires a large suite of ammunition. It was evaluated in the FCT Program and procurements began in 1990. RAAWS is a versatile, portable, and highly lethal weapon system for U.S. Army Ranger Regiment contingency forces.

TPz1 Fuchs NBC Reconnaissance Vehicle System. Thyssen Henschel of Germany (which teamed with General Dynamics Land Systems for U.S. upgrades) manufactured the FOX, as the system is more commonly known in the United States. The Army and Marine Corps fielded this vehicle, a critical biological/chemical warfare asset to U.S. forces in Desert Storm operations.

Night Attack Avionics. The participation of GEC Avionics in the Navy's Realnight developmental program resulted in procurements of forward-looking infrared (FLIR) thermal imaging components and Cats Eyes

advanced night-vision goggles. With procurements beginning in 1990, these components enhance U.S. night-targeting capabilities for Navy, Marine Corps, and Air Force attack aircraft.

HAVE NAP Stand-Off Weapon System (SOW). Designated by the Air Force as the AGM-142, this Israeli (Rafael) precision-guided weapon can be fired from the

F-4, F-111, and B-52G aircrafts. Procured by the Air Force in 1989, HAVE NAP

provides extended-range and improved flight trajectories.

DURANDAL Weapon System. Manufactured by Matra of France, this system (designated the BLU-80/B) provides the Air Force its primary ordnance for cratering enemy airfields. Air Force procurements of DURANDAL began in 1983.

In addition to systems already procured, a number of FCT-funded evaluations have resulted in the qualification of foreign items for pending U.S. acquisition contracts. In some instances, the FCT

evaluation had a positive impact on procurement costs, warranties, or contractual guarantees of U.S. items.

One such example is the Rolls-

Royce/Turbomeca RTM-322 aircraft engine. In 1987 the Navy evaluated the RTM-322 as an alternative to the General Electric (GE) T-700 engine in the SH-60- and UH-60-

series helicopters. Manufacturers from the United Kingdom and France teamed with United Technologies for the T&E. The Navy selected the GE T-700. Although the RTM-

322 did not win the competition, its inclusion significantly reduced U.S. acquisition costs and improved warranty and contractual guarantees.

In 1993 a Dutch firm, Van Halteren Metaal, developed a system to train field artillery teams. The system was qualified for procurement by meeting Army requirements for a 155mm Howitzer Crew Trainer (HCT). The Dutch system could not be procured sole-source. The Army used the data derived from the FCT evaluation to develop a procurement package for its Closed-Loop Artillery Simulator System. The Dutch system will

likely compete for the Army's HCT solicitation in FY
1996.

Appendix A includes a list of all FCT projects procured by the Services for FY 1980* through FY 1994.

The FCT Program increases the U.S. capability to test, evaluate, and employ a large number of systems on short notice in war or other crises. The United States realized the need for this capability from its experience in the Gulf War. Appendix B describes foreign systems used in Desert Storm or systems under evaluation targeted for use at the time the war ended.

Overall, 63 of 275 completed FCT projects resulted in Service procurements. Since 1989, approximately 40 percent of test-to-procure FCT projects have resulted in the procurement of nearly \$3 billion of NDI equipment. The total FCT investment for this equipment was only \$420 million.

**Note: Appendix A includes projects conducted under the FWE and NCT programs.*

ESTIMATES OF RDT&E BENEFITS

Figure 1 demonstrates examples of estimated RDT&E cost savings, reduced unit procurement costs, and/or accelerated fielding times achieved through the FCT Program.

FCT Project	Country	FCT Investm ent	Estimated RDT&E Savings/Ben efits	Estimated Development Savings
Hawk Loader- Transporter	Germany/Bel gium	\$1.4 million	\$4 million (Army)	4 years
Hawk Launcher Modification Kit	Belgium	\$850,00 0	Lower unit cost (Army and Marine Corps)	Not available
Muzzle Velocity System	Israel	\$10 million	Lower unit cost (Army)	4 years
AntiMagnetic Mine Actuating Device	Israel	\$1.4 million	\$6 million (Marine Corps)	4 years
RTM-322 Engine	UK/France	\$5 million	\$47 million (Navy, Army)	Not available
Remote- Control Minesweeper	Sweden	\$1 million	\$15 million (Navy)	5-7 years
Infrared Imaging System	Israel	\$500,00 0	\$13.3 million (Navy)	Not available

Hellfire Missile Warhead	Sweden	\$1.5 million	\$10-\$15 million (Navy)	4-6 years
EHF Traveling Wave Tube	Germany	\$2.2 million	\$40 million in lifecycle costs (Navy)	Not available
SH-2F/G Aircraft Acoustic Processor	Canada	\$600,00 0	\$13.7 million (Navy)	7 years
MCM-1 Tactical Displays	UK	\$2.5 million	\$15 million (Navy)	6 years
HAVE NAP Missile	Israel	\$10.5 million	\$165 million (Air Force)	6 years
HEI Ammunition for AC130 Gunship	Sweden	\$1.5 million	\$40-\$60 million (Air Force)	Not available
Hot Gas Valve Thrust Vector Control	France	\$1.2 million	\$10 million (Air Force)	Not available
Advanced Dielectric Measurement	France	\$1.8 million	\$4.6 million (Air Force)	4 years

Figure 1. Examples of Estimated RDT&E Benefits

INDUSTRIAL TEAMING AND U.S. PRODUCTION LICENSING

FCT projects frequently catalyze industry teaming arrangements. U.S. prime contractors often seek teaming arrangements with foreign defense firms for items having market potential in the United States. These arrangements include work-sharing or perhaps producing a foreign-developed item under license in the United States. Teaming often leads to long-term industrial relationships and assists each party in assuring a presence in the competitive international market.

Outlined below are examples of teaming relationships between U.S. and foreign companies that resulted from FCT tests and evaluations:

Heavy Assault Bridge, Leguan. In 1994 the Army selected the German MAN GHH bridging system for Engineering and Manufacturing Development. MAN teamed with General Dynamics Land Systems of Warren, Michigan.

E-2C Multifunction Display Control Unit. Marconi of Canada teamed with the U.S. E-2 aircraft manufacturer Grumman Corporation of Bethpage, New York, on the CMA 882 Avionics Management System Program.

EHF Traveling Wave Tubes. As a result of the successful FCT testing of its product in 1988, Siemens of Germany teamed with the Raytheon Corporation of Lexington, Massachusetts, on a Navy EHF submarine communications program.

HAVE NAP SOW. HAVE NAP stimulated a teaming relationship between the Israeli manufacturer, Rafael, and Martin Marietta of Orlando, Florida. Now designated the AGM-142, HAVE NAP is the Air Force's primary air field attack weapon.

BOL Chaff Dispenser. The Swedish and United Kingdom manufacturers of the BOL dispenser and BOL chaff, Celsius Tech and Chem Ring, respectively, are teamed with TRACOR of Austin, Texas. The BOL system is used by the Navy in the LAU-7 Sidewinder missile launcher.

Electronic Combat Integrated Pylon System (ECIPS). Per Udsen, the Danish manufacturer of ECIPS, is now teamed with Northrop Corporation of Rolling Meadows, Illinois, and Lockheed Corporation of Fort Worth, Texas. ECIPS is used for the electronic warfare system of Air Force F-16 aircraft.

The production of foreign-developed items in the United States strengthens the U.S. economy and industrial base, and also creates American jobs. Figure 2 illustrates examples of foreign-developed items successfully tested under the FCT Program that have been subsequently licensed and produced in the United States.

Item	Foreign Mfr./Country	U.S. Production	Location
60/81mm Mortar Practice Ammo	SOLTAM/ SALGAD, Israel	POCAL	Moscow, PA
120mm Mortar and Ammo (Tampella)	IMI, Israel	Martin Marrietta Army Ammo Plant Radford Plant Brockway Standard Loral Corporation United Ammunition Container ARMTEC Polymer Technology	Milan, TN Scranton, PA Scranton, PA Homerville, GA Scranton, PA Milan, TN Coachilla, CA New Jersey
155mm Howitzer	Royal Ordnance, United Kingdom	Rock Island Arsenal Watervliet Arsenal	Rock Island, IL Watervliet, NY
Chemical Agent Monitor	Graseby, United Kingdom	ETG, Inc.	Towson, MD
Sanator Decontaminat	Karl Hoie, Norway	Engineer Air, Inc. (EAI)	St. Louis, MO

ion System

Muzzle Velocity System	Reshef, Israel	Technical Systems, Inc.	Grand Rapids, MI
Small Unit Support Vehicle	Haagland-Soner, Sweden	United Defense Corporation	San Jose, CA
M72A3 Light Anti-Tank Weapon	Raufoss, Norway	Talley Defense TRACOR	Mesa, AZ San Ramon, CA
Combat Support Boat	Fairey Allday, United Kingdom	Advanced Technology	Charleston, SC
Munitions Ejector Release Units	Alkan, Germany	EDO Corporation	Salt Lake City, UT
Chemical Defense Equipment-Air Crew Suits	Blucher, Germany	Hoechst-Celanese Corporation	Charlotte, NC

Figure 2. Examples of U.S. Production Resulting From FCT Program

SUMMARY OF FCT ACHIEVEMENTS

Fourteen years ago, the FCT Program began testing and evaluating military hardware developed and produced by U.S. allies and other friendly countries. Since that time, the FCT Program has realized significant savings in RDT&E money. Today, it continues to save DoD

millions of dollars, as well as years of development time.

Although the exact dollar amount that has been saved can be debated, the amount can realistically be estimated in the hundreds of millions of dollars. Moreover, the qualification of foreign-produced items as potential second sources has unquestionably increased competition and this has lowered the cost of procurements. The FCT Program has proved its success and promises to be successful in the future.

HIGHLIGHTS OF THE FY 1994 FCT PROGRAM

FY 1994 was a productive year. Thirty-one projects were funded in the FCT Program--13 were new and 18 were ongoing projects approved for continued funding.

Several projects successfully completed T&E and were procured. This is a direct result of refocusing the program toward procurement and using a disciplined approach to evaluate and select candidate projects.

This report highlights all projects that were active during FY 1994. Two of these projects have resulted in Service procurement decisions or recommendations, and procurement packages are being developed for award. These are--

High Pressure Pure Air Generator (United Kingdom-Ultra Electronics)--Navy.

Interrogate Friend-or-Foe (IFF) Tracker (United Kingdom-Cossor Electronics)--Navy.

Also awarded in FY 1994 were procurement contracts for three items that completed FCT evaluation in FY 1993.

In addition, the decision was made by the Air Force to field one electronic warfare system that completed evaluation in FY 1993. These items include--

High Explosive, Dual Purpose (HEDP) Round for the 84mm Carl Gustaf
RAAWS (Sweden-Bofors AB)--Army.

Muzzle Velocity System (Israel-Reshef)--Army.

LI-465 Fuzes for 40mm HEI Ammunition for the AC-130 Gunship (Sweden-

Bofors AB) --Air Force.

Enhanced Electronic Warfare Scenario Generator
(United Kingdom-Data Sciences) --Air Force.

FOREIGN PARTICIPATION IN FCT

The FCT Program depends on the acceptance and participation of other countries for its success.

Figure 3 lists the foreign countries that participated in the FCT Program from FY 1980* through FY 1994.

Numerous FCT projects involved equipment from two or more countries.

Country	Number of FCT Projects	FCT Funds Spent (\$ million)	Number of Projects Resulting in Procurements	Value of Procurements (\$ million)
United Kingdom	115	130.2	21	1,149.4
Germany	57	49.4	13	504.9
France	56	50.9	3	253.6
Israel	40	29.2	8	387.6
Sweden	35	35.8	6	180.7
Canada	22	23.2	2	14.1
Norway	17	12.7	4	358.6
Italy	13	11.8	0	0
Netherlands	11	11.1	0	0

Australia	10	3.7	1	7.0
Denmark	10	4.7	3	37.4
Belgium	8	2.6	1	6.8
Japan	6	1.5	1	0.1
Switzerland	5	.9	0	0
Austria	3	.4	0	0
Russia	2	2.0	0	0
Finland	1	.1	0	0
Ukraine	1	.6	0	0
Total Value of Procurements	2,900.2			

Figure 3. Foreign FCT Participation by Country

**Figure 3 includes projects conducted under the FWE and NCT programs.*

SERVICE PARTICIPATION IN FCT

Figure 4 summarizes Service participation in the FCT Program since 1980.*

Service	Total Projects (FY 1980- FY 1994)	Projects Completed During FY 1994	Active Projects as of 30 Sept 1994	Projects Resulting in Subsequent Procurement
Army	104	8	5	27
Navy/Marine Corps	135	5	12	23
Air Force	64	1	11	13
Total	303	14	28	63

Figure 4. Service Participation in the FCT Program, FY 1980-1994

**Figure 4 includes projects conducted under the FWE and NCT programs.*

FCT PROJECTS COMPLETED IN FY 1994

This section provides a description of FCT projects completed in FY 1994. The final status of each project and the FCT funding provided is indicated.

SEMIAUTOMATIC LOADER FOR 155MM HOWITZER IMPROVEMENT

PROGRAM--SWITZERLAND

The short-tray loader manufactured by WF (Eidgenössische Waffenfabrik) Swiss Federal Arms Factory is a semiautomatic loader (SAL) which provides automatic ramming of projectiles into the 155mm howitzer firing chamber. This application dramatically increases cyclic and sustained rates-of-fire and reduces the workload on gun crews.

OSD approved the project in FY 1989 and the Army selected the WF system for further testing with the M109A6 Paladin Howitzer vehicle. The Army plans to assimilate all or part of the Swiss semiautomatic loader into the Army's XM297/XM194 Armament Package Program.

FCT FUNDING	PRIOR YEAR(S)	FY	TOTAL
PROVIDED		1994	\$1,080,000
	\$1,080,000		

MECHANICAL MODIFICATIONS FOR HAWK MISSILE LAUNCHER--

BELGIUM

Actel Bell-SDT S.A. designed the HAWK Launcher upgrade. The upgrade includes a new suspension, a boom locking device, missile fixation, and an improved braking system. These features eliminate unloading/loading operations prior to deployment on the battlefield. The Belgian upgrade was more cost-effective than the upgrade developed in the United State. The FCT project was approved in FY 1992.

A HAWK launcher in the U.S. inventory--with a Belgian missile fixation system--completed engineering and user evaluations but the Army did not procure the upgrade due to lack of funds. The Army is seeking funds at this time.

FCT FUNDING PROVIDED	PRIOR YEAR(S)	FY 1994	TOTAL \$834,000
	\$834,000	0	

SMART MORTAR PROJECTILE TECHNOLOGY--SWEDEN, UNITED KINGDOM

This FCT project includes technical assessments of two foreign precision-guided mortar munitions (PGMM)--Strix and Merlin. Strix is a 120mm precision-guided anti-armor mortar munition that uses an infrared seeker sensor. The British Aerospace (BAe) Merlin is an 81mm smart mortar munition that uses a millimeter wave seeker for target acquisition and guidance. The technical assessment assisted the Army/Marine Corps PGMM Study Advisory Group on in formulating requirements for future mortar systems.

OSD approved the project in FY 1993 and the Army PM-Mortars and Army Armaments Research, Development and Engineering Center (ARDEC) conducted technical and live-fire tests on All Up Rounds (AURs) at Eglin Air Force Base, Florida. The Army will fund a follow-on evaluation. BAe is teamed with Alliant TechSystems and Rockwell for the followup evaluation.

FCT FUNDING	PRIOR YEAR(S)	FY 1994	TOTAL
PROVIDED	\$3,036,000	\$467,000	\$3,503,000

9MM HIGH PERFORMANCE CARTRIDGE--SWEDEN

Bofors AB of Sweden manufactures the M39B cartridge. This high performance cartridge features a bullet jacket design that enhances penetration. The Army ARDEC evaluated the cartridge against a joint Service requirement to improve the 9mm pistol cartridge (the M882 ball cartridge) used to defeat body armor.

OSD approved the project in 1991. The Swedish cartridge demonstrated increased performance during testing, but it did not meet Army requirements for cold weather operations. The M39B evaluation is complete and there is no followup Army project to further evaluate or purchase the M39B.

FCT FUNDING	PRIOR	FY 1994	TOTAL
PROVIDED	YEAR(S)	0	\$392,000
	\$392,000		

ULTRA-LIGHTWEIGHT CAMOUFLAGE NEW SYSTEM (ULCANS) --GERMANY,
ISRAEL, SWEDEN, UNITED KINGDOM

This FCT project involved the technical assessment of the ULCANS, a series of ultra-lightweight camouflage nets used to conceal Army aircraft, vehicles, and military equipment. In FY 1991, the Army evaluated candidate camouflage systems that were developed by Plocquet (Germany), FMS Fibrotex (Israel), Diab-Barracuda (Sweden), and Bridport Gundry (United Kingdom). The Army selected FMS Fibrotex, Diab-Barracuda, and U.S. candidates for additional testing by the Belvoir Research, Development, and Engineering Center.

This project showed that the ULCANS requirement can be satisfied through an NDI approach. The Army developed a performance specification and intends to procure ULCANS through full and open competition. A production contract is expected to be awarded in August 1995. FMS Fibrotex and Diab-Barracuda are expected to participate in this competition.

FCT FUNDING	PRIOR	FY 1994	TOTAL
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PROVIDED	YEAR(S)	0	\$956,000
			\$956,000

AIRTRONIC LIGHT OIL BURNER (ALOB) --SWEDEN

The Bentone-Electro Oil ALOB is a multifuel, thermostatically controlled device that uses an innovative method of atomizing and burning a wide variety of liquid fuels. The device is used widely in Europe and can likely meet a Marine Corps requirement for a multifuel heat source for the new Tray Ration Heating System.

OSD approved this project in May 1992 and FCT developmental testing was completed in July 1992. The Marine Corps completed operational testing at Camp Lejeune, North Carolina, in October 1993. The ALOB performed well and met Marine Corps requirements. A production decision is anticipated in March 1995 to include the reprogramming of funds to procure 363 systems over 3 years, starting in FY 1995.

FCT FUNDING	PRIOR	FY 1994	TOTAL
PROVIDED	YEAR(S)	0	\$32,900
	\$32,900		

INFRARED FOCAL PLANE ARRAYS--FRANCE

The focal plane arrays are manufactured by Societe Francaise de Detecteur Infrarouge (SOFRADIR). The arrays are the second generation of thermal imaging technology and promise increased range performance and image fidelity. The SOFRADIR arrays are equipped with 288x4 pixel (sensing element) devices.

OSD approved the project in FY 1990. In 1991 contracts were awarded to Kollsman Instrument, SOFRADIR's U.S. licensee, to retrofit government-furnished AN/AAS-37 and AN/TAS-4 FLIRs for laboratory and field tests. The FCT project was completed in FY 1994 and the Army will decide on followup actions. Meanwhile, the Army will continue evaluating the French units with the Advanced Scout Vehicle Program and with a classified project.

FCT	PRIOR	FY 1994	TOTAL
FUNDING	YEAR(S)	0	\$1,553,000
PROVIDED	\$1,553,000		

ANTIMAGNETIC MINE ACTUATING DEVICE (AMMAD) --ISRAEL

The Marine Corps evaluated two versions of the Israel Aircraft Industries AMMAD. The first version, rolling AMMAD, is a land mine countermeasures system that uses a rotating elastomer-covered steel cylinder to generate a strong varying magnetic field. This field triggers magnetically fused mines causing premature detonation. The second version, on-board AMMAD, mounts directly on a vehicle or mine rake and uses vehicle power for the magnetic field.

OSD approved the project in August 1991. Testing was completed in August 1994. Rolling AMMAD, configured for Marine Corps amphibian assault vehicles, was incorporated in the ongoing Mine Rake research and development program. The Marine Corps and Army also jointly tested rolling AMMAD and selected it as an SL-3 component of the Main Battle Tank Track-Width Mine Plow. The Army comparatively tested on-board AMMAD against a similar U.S.-developed system. An on-board AMMAD procurement decision will be made as part of the Marine Corps'

overall Magnetic Countermining System program in the first quarter of FY 1996.

FCT	PRIOR	FY 1994	TOTAL
FUNDING	YEAR(S)	\$158,000	\$1,388,500
PROVIDED	\$1,230,500		

HIGH PRESSURE PURE AIR GENERATOR (HIPAG) --UNITED KINGDOM

The HIPAG system provides filtered compressed ambient air as a refrigerant for the AIM-9 Sidewinder missile seeker cooling system, replacing the existing nitrogen coolant and bottle. The HIPAG operational unit fits within the aircraft LAU-7 missile launcher cavity and has potential for meeting a Navy requirement for a cost-effective, lower maintenance replacement for the cooling system currently in use.

The HIPAG evaluation was initiated in FY 1987. An early model successfully completed environmental and production verification tests in FY 1988. During FYs 1989-1992, an upgraded version was incorporated into an engineering improvement being considered for the Sidewinder missile cooling system. Flight testing in 1994 by the Navy's Operational Test and Evaluation Command to reassess earlier HIPAG tests. This testing concluded that HIPAG is operationally effective and potentially suitable. Approval of the engineering change proposal for integration of HIPAG into the LAU-7 missile launcher and award of a HIPAG production contract are planned for the second half of FY 1995.

FCT	PRIOR	FY 1994	TOTAL
FUNDING	YEAR(S)	0	\$3,053,000
PROVIDED	\$3,053,000		

INTERROGATE FRIEND OR FOE (IFF) TRACKER--UNITED KINGDOM

The Cossor Electronics Aircraft Data and Positioning System interrogates and simultaneously tracks up to eight aircraft targets. The IFF tracker is used on electronic warfare antennas, such as the transmit antennas of the Navy's AN/ULQ-13(V) Countermeasures Signal Simulator Vans employed by Multi-Electronic Warfare Support Groups (MEWSG) for electronic warfare training.

The project was approved in August 1992. Test articles were delivered in February 1994 and FCT testing was conducted at Naval Weapons Support Center (NWSC), Crane,

Indiana; the Navy's Fallon, Nevada, electronic combat test site; and at sea. Successful testing was completed in September 1994. The Navy has recommended the procurement and integration of eight systems to completely outfit Fleet AN/ULQ-13V1 assets.

FCT FUNDING	PRIOR	FY 1994	TOTAL
PROVIDED	YEAR(S)	\$88,000	\$688,000
	\$600,000		

THERMAL/TELEVISION IMAGING AIRBORNE LASER DESIGNATOR

(TIALD) --UNITED KINGDOM

The GEC-Marconi TIALD is a single pod target acquisition and weapons designation system in production for United Kingdom Royal Air Force (RAF). A pre-production version of TIALD was reportedly employed with great success by RAF Tornado aircraft during Desert Storm operations. TIALD is the only production pod in the world that provides dual-mode television and infrared imaging, as well as laser designation and ranging through a single optical system. TIALD is ideally suited for use on single-seat tactical aircraft, such as the Marine Corps AV-8B Harrier.

OSD approved the project in August 1992. The production TIALD began T&E in the fourth quarter of 1993 at the Naval Air Warfare Center (NAWC), China Lake, and at McDonnell Aerospace (MDA) Avionics Integration Laboratory. AV-8B flight testing at NAWC was completed in September 1994, with outcomes meeting or exceeding Marine Corps requirements. A Marine Corps procurement decision is pending.

FCT FUNDING	PRIOR	FY	TOTAL
PROVIDED	YEAR(S)	1994	\$5,000,000
	\$1,860,00	\$3,140	
	0	,000	

**DISTANCE MEASURING EQUIPMENT, PRECISION (DME/P) -- ITALY,
ISRAEL**

Three airborne interrogators offering advances in azimuth and elevation guidance for aircraft precision approach and landing systems were evaluated to potentially satisfy an Air Force requirement for a ranging source for a U.S. Microwave Landing System (MLS) ranging source.

OSD approved the project in August 1992. All three interrogators completed laboratory and flight testing in FY 1994 at the Volpe National Transportation Systems Center, Federal Aviation Administration Technical Center, and Wright-Patterson Air Force Base. The FCT evaluation

demonstrated that all three interrogators could satisfy the user requirement, but the Air Force decided not to procure DME/P, selecting a solution based on Global Positioning System (GPS) technology.

FCT	PRIOR	FY 1994	TOTAL
FUNDING	YEAR(S)	0	\$1,875,000
PROVIDED	\$1,875,000		

**LIGHTWEIGHT IN-STRIDE EXTRACTION CAPABILITY/INSTRIDE
EXTRACTOR (ISE) --ISRAEL, UNITED KINGDOM**

Israel Aircraft Industries, Pearson Engineering, and Firth Defense Systems develop lightweight countermine devices to clear surface-laid/emplaced land mines and other unexploded ordnance. These devices give a host vehicle an organic, self-extraction capability.

OSD approved the project in FY 1994, but terminated it in September 1994 based on the Army's recommendation. The Army's ISE program lost its user proponency and production funding was eliminated.

FCT	PRIOR	FY 1994	TOTAL
FUNDING	YEAR(S)	185,000	\$185,000
PROVIDED	0		

AUTOMATIC TARGET TRACKERS--ISRAEL, UNITED KINGDOM

The ATT is a computer-driven subsystem for the Abrams Main Battle Tank Fire Control System, which automatically detects, tracks, and prioritizes multiple targets for engagement. OSD selected three foreign candidates developed by Elbit (Israel), Israel Aircraft Industries, and OCTEC (United Kingdom) for evaluation to satisfy the Army ATT requirement. A domestic candidate was also identified.

The project was approved as a technical assessment in FY 1994. OSD terminated this FCT effort in October 1994 because the scope of the Army's integration approach was too broad.

FCT	PRIOR	FY 1994	TOTAL
FUNDING	YEAR(S)	\$1,249,0	\$1,249,000
PROVIDED	0	00	

FCT PROJECTS CONTINUING INTO FY 1995

This section covers foreign systems and equipment that were evaluated during FY 1994. The status and funding of each project through FY 1994 is presented. OSD expects the final evaluation of each project to be finished during FY 1995.

25MM BREAK-UP AMMUNITION--NETHERLANDS

NWM De Kruithoorn B.V. designed and developed the 25mm Break-up Cartridge. This cartridge is designed so that the plastic projectile ruptures immediately after leaving the weapon muzzle and falls harmlessly to the ground. It is now being tested to determine whether it satisfies the firing requirements of the M242 Bushmaster Chain Gun System mounted on the Bradley Infantry Fighting Vehicle and employed at facilities with limited firing ranges. The project is under the cognizance of the Army ARDEC.

The project was initiated in FY 1994 and a contract for test articles was awarded in July 1994. The Combat Systems Test Activity (CSTA), Aberdeen Proving Ground, Maryland, is expected to began testing the Dutch ammunition in mid-1995. OSD approved an additional \$70,000 of FCT funding in FY 1995 for completion of the project.

FCT	PRIOR	FY 1994	TOTAL
FUNDING	YEAR(S)	\$250,000	\$250,000
PROVIDED	0		

**GUN LAYING AND POSITIONING SYSTEM (GLPS) --SWITZERLAND,
ISRAEL**

GLPS is a tripod-mounted gyroscope that is integrated with an optical instrument, an eye-safe laser range finder, and a U.S.-Government Precision Lightweight Global Positioning System Receiver. The system provides Army and Marine Corps towed and self-propelled howitzer batteries with advanced autonomous positioning and directional capabilities. GLPS is intended to replace or supplement slow and manpower-intensive methods for laying artillery. The project is under the cognizance of the Army Corps of Engineers Topographic Engineering Center, Fort Belvoir, Virginia.

OSD approved the project in FY 1993. The Army awarded test article contracts through full and open competition

to Leica Heerbrugg AG (Switzerland) and TAMAM Precision Instruments (Israel). Candidate systems will be delivered to the CSTA, Aberdeen Proving Ground, Maryland, in May 1995. No additional FCT funding was requested for FY 1995.

FCT	PRIOR	FY 1994	TOTAL
FUNDING	YEAR(S)	\$600,000	\$1,560,000
PROVIDED	\$960,000		

POWERED MULTIFUEL BURNER UNIT--CANADA

The International Thermal Research candidate is a powered-type multifuel burner using fuel atomization to achieve clean combustion. This candidate may offer advantages over the Army's standard gasoline-fired M2/M2A burner unit for field kitchens, which achieves fuel vaporization under pressure. The Army is also evaluating a U.S. burner candidate.

OSD approved the project in FY 1994. The Army awarded a contract to the U.S. licensee, Tech Research Group of Providence, Rhode Island, in September 1994. Test articles are scheduled to be delivered to the Army's Natick Research, Development and Engineering Center (NRDEC) in March 1995. Developmental and operational testing

is scheduled to begin in July 1995. The Army requested \$140,000 of additional funding for FY 1995 for complete the project.

FCT	PRIOR	FY 1994	TOTAL
FUNDING	YEAR(S)	\$247,000	\$247,000
PROVIDED:	0		

INDIVIDUAL RESERVE PARACHUTE--FRANCE

The Aertzura EFA model TAP511F2 reserve parachute uses a spring-assisted pilot chute assembly to project the parachute into the slip stream. This design feature aids parachute inflation and has the potential to correct a serious safety deficiency in the Army's current T-10 reserve parachute.

The Airborne and Special Operations Test Directorate conducted tests during FY 1994 at Fort Bragg, North Carolina. The French pilot chute deployment system showed significant improvement

over the T-10 reserve parachute. The Army modified the 82nd Airborne rapid deployment force's T-10 reserve parachutes with French components. An unforeseen contracting issue delayed the contract award, but the Army expects to resolve it in early 1995. No additional FCT funding was requested for the project in FY 1995.

FCT	PRIOR	FY 1994	TOTAL
FUNDING	YEAR(S)	\$314,000	\$314,000
PROVIDED	0		

LIQUID GAS EUTECTIC REACTION PROCESS FOR POROUS

MATERIALS--UKRAINE

Dnepropetrovst Metallurgical Institute (DMI) developed a revolutionary process for the production of porous materials. This process is used to produce porous metals such as manganese, aluminum, and nickel for applications in self-lubricating bearings, acoustic reflectors, and bulkhead partitions.

OSD approved the project in FY 1994. The Naval Research Laboratory (NRL) validated DMI claims through tensile testing of porous copper samples. Low cycle fatigue tests of porous samples were started and OSD approved an additional \$510,000 for FY 1995 for completion of the project.

FCT FUNDING	PRIOR	FY	TOTAL
PROVIDED	YEAR(S)	1994	\$615,000
	0	\$615,0	
		00	

PROJECTILE ATTACK TRIALS--GERMANY

This FCT evaluation is part of the Navy's Projectile Attack Trials (PATs). The purpose of the evaluation is to determine techniques for disposal of unexploded ordnance. The Junghans Feinwerktechnik DuD Disposer system uses a unique master clock to allow remote neutralization and detonation of several types and shapes of unexploded ordnance at the same time. Several European navies currently use the DuD Disposer.

OSD initiated this project in FY 1994. The contract for test articles was awarded during the fourth quarter of FY 1994. Operational and safety test planning has begun. An additional \$53,000 was approved for FY 1995 for completion of this project.

FCT FUNDING	PRIOR	FY	TOTAL
PROVIDED	YEAR(S)	1994	\$63,000
	0		
		\$63,	
		000	

"Z" ELECTRO-OPTICAL PAYLOAD (ZEOP) --ISRAEL

ZEOP was developed by Rafael, an Israeli firm. This design incorporates dual television and FLIR sensors housed in an autotrack stabilized system. The electro-optical package weighs less than 50 pounds. ZEOP is designed for use in tactical unmanned aerial vehicles (UAVs) in reconnaissance, surveillance, and target acquisition (RSTA) missions.

OSD initiated this project in FY 1994. The Navy awarded a contract in August 1994 for two ZEOP payloads and UAV integration and test support. Test planning is in progress. The Program Executive Officer, Cruise Missiles/Unmanned Aerial Vehicles, has cognizance over FCT test planning that is now underway. OSD approved an additional \$500,000 for FY 1995 for completion of the project.

FCT FUNDING	PRIOR	FY	TOTAL
PROVIDED	YEAR(S) 0	1994	\$1 million
		\$1	
		millio	
		n	

**84MM INSENSITIVE MUNITION HIGH EXPLOSIVE ANTI-TANK (HEAT)
ROUND--SWEDEN**

The Bofors AB candidate is an insensitive munitions version of the 84mm FFV 551 HEAT Round, which is used in

the Swedish Carl Gustaf M3 recoilless rifle system. The Swedish ammunition has the potential to meet Navy insensitive munitions requirements. If testing is successful, the Carl Gustaf M3 will be certified as a candidate for use by special warfare units.

OSD initiated this project in FY 1994. The Navy awarded a contract for test articles during the fourth quarter of FY 1994 and test planning is nearly completed. OSD approved an additional \$1,046,000 for FY 1995 for completion of the project.

FCT FUNDING	PRIOR	FY	TOTAL
PROVIDED	YEAR(S)	1994	\$1,231,000
	0	\$1,231	
		,000	

SPRAY FORMED ALLOY 625 PIPING--SWEDEN

The Sandvik Osprey Spray Forming Process converts liquid metal into shaped preforms in a single

atomization/deposition operation. The preforms are then turned into semifinished products with properties comparable to, or better than, their current wrought counterpart. The Navy is evaluating this process for potential application to the manufacturing of conventional Alloy 625 piping for Naval ship construction.

OSD initiated this project in FY 1991 and extended it during FY 1993 to complete the final certification for submarine construction. The Navy conducted nondestructive tests and microstructure evaluations of 625 Alloy piping preforms fabricated by the Sandvik technique at the Navy's David Taylor Research Center, Carderock, Maryland. The T&E started in November 1990 and was successfully completed in August 1992. Testing to certify the Sandvik process for the manufacture of submarine piping began in early FY 1993. Supplemental corrosion fatigue testing will be completed in FY 1995, at which time a Navy decision will be made. No funds were requested for this project for FY 1995.

FCT FUNDING	PRIOR	FY	TOTAL
PROVIDED	YEAR(S)	1994	\$2,319,000
	\$2,069,000	\$250,	
		000	

**DIGITAL FLIGHT CONTROL SYSTEM FOR F-14 TOMCAT--UNITED
KINGDOM**

GEC Avionics developed the Digital Flight Control System (DFCS) for the European Fighter Aircraft (EFA) Program. The DFCS uses a "triplex" system of digital processing to provide fail-operational stability augmentation. The Naval Air Systems Command (NAVAIR) is evaluating the DFCS as a way to prevent aircraft losses due to unrecoverable flat spins.

OSD approved the project in August 1991. The Navy is conducting laboratory evaluations and aircraft integration at NAWC, Patuxent River, Maryland. Tests focus on stability/flight control and aircraft carrier suitability. The Navy completed actuator and aircraft instrumentation tests at NAWC in late FY 1993. All FCT testing is expected to be completed by the end of FY 1995. The Navy did not request funds for this project for FY 1995.

FCT	PRIOR	FY 1994	TOTAL
FUNDING	YEAR(S)	\$5,868,	\$21,202,000
PROVIDED	\$15,334,0	000	
	00		

FORWARD AREA DEGAUSSING RANGE--UNITED KINGDOM

The Dowty Magnetics transportable degaussing range uses a small number of magnetometers to collect ship hull data. The range calculates a ship's magnetic signature

and other magnetic parameters. These data are then used to calibrate the ship's onboard degaussing system. Navy mine countermeasures policy is that surface combatants undergo ranging at selected intervals.

OSD initiated this project in August 1992. The United Kingdom range will begin T&E in early 1995. Testing will take place at NSWC, White Oak, Maryland, and at the Navy's degaussing range facility in Norfolk, Virginia. The Navy did not request funds for this project for FY 1995.

FCT FUNDING	PRIOR	FY 1994	TOTAL
PROVIDED	YEAR(S)	0	\$1,818,000
			\$1,818,000

ADVANCED FIBER OPTIC HELMET MOUNTED DISPLAY (AFOHMD) --

CANADA

The CAE Electronics AFOHMD is an advanced aviation helmet. It uses a cathode ray tube-based projection system to create a flying field-of-view environment for a pilot performing strike mission training and rehearsal. This low-cost system may replace expensive training domes and bulky projection systems. AFOHMD is in limited production and operational in a German Air Force Tornado aircraft simulator facility. NAVAIR is evaluating the Canadian system for potential application to the Deployable Tactical Aircraft Training System (DTATS). The DTATS acquisition is planned for FY 1997. A competitive "fly-off" is set for FY 1998.

OSD initiated this project in December 1992. Phase I testing was completed in FY 1994. Advanced testing began at the Manned Flight Simulator Facility at NAWC, Patuxent River, Maryland. No funds were requested for this project for FY 1995.

FCT FUNDING	PRIOR	FY 94	TOTAL
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PROVIDED	YEAR(S)	\$860,0	\$2,817,000
	\$1,957,000	00	

GIANT INFRARED DECOY SYSTEM--GERMANY

The Buck Industries GIANT is an antiship missile defense infrared decoy designed for use on large ships. GIANT is in full production and currently operational on German and Canadian navy ships. It is compatible with the Navy's MK36 decoy launcher system and may be an alternative to the MK186 Mod 2 TORCH system currently being procured by the Navy.

OSD approved the FCT project in August 1992 and a contract for test articles was awarded in May 1993. The Navy completed technical feasibility, hazard assessment, and environmental preconditioning tests. Approvals for the TECHEVAL/OPEVAL were granted. The Navy did not request funds for this project for FY 1995.

FCT FUNDING	PRIOR	FY	TOTAL
PROVIDED	YEAR(S)	1994	\$1,492,000
	\$1,059,000	\$433,	
		000	

LASER AIRBORNE DEPTH SOUNDER SYSTEM (LADS) --AUSTRALIA

The BHP Engineering /Vision Systems LADS is a self-contained, hydrographic surveying system based on laser technology. The Royal Australian Navy (RAN) is currently testing the LADS system for future operational use. The LADS produces accurate high-density digital depth and position data when it is combined with GPS technology. This system fulfills shallow water survey requirements, such as those employed for amphibious combat operations.

OSD approved the LADS project in August 1992. The Navy successfully completed Phase I FCT testing in Adelaide, Australia. These tests were performed concurrently with RAN operational tests during January 1993. Phase II testing will integrate the Australian system into a U.S.

hydrographic airframe at the manufacturer's facility in Australia.

The Navy plans to conduct flight tests at multiple RAN Hydrographic Service ranges between Port Lincoln and Adelaide. OSD approved an additional \$900,000 for FY 1995 for completion of the project.

FCT FUNDING	PRIOR	FY 1994	TOTAL
PROVIDED	YEAR(S)	\$2,479,	\$2,779,000
	\$300,000	000	

SUBMERGED TOWED ACOUSTIC BEACON JAMMER--UNITED KINGDOM

The Royal Ordnance naval mine warfare countermeasures system is in full production and operational with the Royal Navy. The technical description is classified. The Naval Sea Systems Command (NAVSEA) is conducting the FCT evaluation.

OSD initiated this project in FY 1993. The Navy conducted initial testing at its Fort Monroe, Virginia, test range. The United Kingdom test item demonstrated the capability to provide significant protection in the test scenario but not full protection. The Navy conducted an expanded test program but additional testing will have to be done to assess the system's full potential. The Navy did not request additional FCT funds for FY 1995.

FCT FUNDING	PRIOR	FY 1994	TOTAL
PROVIDED	YEAR(S)	0	\$362,000
	\$362,000		

PROPSCAN MARINE PROPELLER INSPECTION SYSTEM--AUSTRALIA

The Ryan Marine Products Propeller Inspection System is used to collect and analyze geometric data on marine propellers for the purpose of manufacture, inspection, and repair. PROPSCAN is in use by the RAN and has been procured by the Canadian Maritime Defense Forces.

OSD approved the project in March 1993 but did not fund it until FY 1994. Preliminary test planning was completed in FY 1993. The test article contract was awarded in the fourth quarter of FY 1994 and testing is scheduled in FY 1995 at the David Taylor Research Development Center, Maryland. OSD approved an additional \$25,000 for FY 1995 for completion of the project.

FCT FUNDING	PRIOR	FY 1994	TOTAL
PROVIDED	YEAR(S)	\$590,00	\$590,000
	0	0	

ELECTRONIC COMBAT INTEGRATED PYLON SYSTEM (ECIPS) --

DENMARK

The Per Udsen ECIPS is an aircraft weapons pylon that was modified to carry electronic warfare payloads on Royal Danish Air Force F-16 aircraft. The FCT evaluation is under the cognizance of the Air National Guard/Air Force Reserve Test Center, Tucson, Arizona.

OSD approved the project in August 1991. The Air Force completed antenna pattern measurement testing of three U.S. electronic warfare systems selected for integration with ECIPS. These tests were followed by F-16 flight testing of an integrated ECIPS-electronic warfare suite at the USAF Flight Test Center, Edwards Air Force Base, California. In September 1993, the Air Force tested the suite at the Navy's Supersonic Naval Ordnance Research Track, NAWC, China Lake. ECIPS, with an installed AAR-47 Missile Warning System installed, will undergo live-fire missile tests on a QF-106 drone at Tyndall Air Force Base, Florida in the spring of 1995. The Air Force did not request additional funding for FY 1995.

FCT FUNDING	PRIOR	FY	TOTAL
PROVIDED	YEAR(S)	1994	\$1,535,000
	\$1,385,000	\$150,0	
		00	

ION ENGINE THRUSTER--UNITED KINGDOM

The Matra-Marconi Space UK-10 is a xenon ion engine thruster propulsion system. The Air Force is evaluating the UK-10 to potentially satisfy Air Force satellite station-keeping propulsion requirements. The system was selected as the primary station-keeping thruster on the European Space Agency's ARTEMIS satellite, which is scheduled for operation in 1997.

OSD approved this project in May 1992. The Aerospace Corporation Advanced Propulsion Diagnostic Laboratory in El Segundo, California, started testing in April 1993. Results to date have been very favorable. Testing will be completed by April 1995. The Air Force did not request funds for FY 1995.

FCT FUNDING	PRIOR	FY	TOTAL
PROVIDED	YEAR(S)	1994	\$1,288,000
	\$911,000	\$377,0	
		00	

BONDLINE ENERGY MEASUREMENT SYSTEM--GERMANY

The Fraunhofer Institut fur Chemische candidate is an advanced laser measurement and data analysis system, which measures "noncontact biaxial strain distribution." The system makes some calculations that help determine the energy needed to develop a good bondline in solid rocket motors. Phillips Laboratory, Kirtland Air Force Base, New Mexico, is evaluating the system to potentially solve problems with bondline failures in solid rocket motors. Bondline failures are reported as the cause of 53 percent of fired motors that have failed.

OSD approved the project in August 1992. Phillips Laboratory prepared two series of inert propellant specimens for testing on the Fraunhofer system in Germany from May 1993 to June 1994. In September 1994, one

bondline measurement system was delivered to the Phillips Laboratory and preparations were made to begin testing samples prepared by one of the solid rocket motor manufacturers. No additional FCT funding was requested for FY 1995.

FCT FUNDING	PRIOR	FY	TOTAL
PROVIDED	YEAR(S)	1994	\$248,000
	\$128,000	\$120,000	

**EAGLE VISION DEPLOYABLE SATELLITE GROUND RECEIVING AND
PROCESSING STATION--FRANCE**

Eagle Vision, developed by Matra CAP, is a mobile satellite receiving station designed for direct reception and rapid processing of commercially derived digital satellite imagery. This system integrates elevation data with photographic data down-

linked from satellites. The output is a three-dimensional view of flight paths and target areas for mission planning and rehearsal.

OSD approved the project in August 1992. The complete Eagle Vision test bed started field operational testing in June 1994. Formal testing started in September 1994 and results are positive to date. OSD approved \$970,000 of additional funding for FY 1995 for completion of the project.

FCT FUNDING	PRIOR	FY	TOTAL
PROVIDED	YEAR(S)	1994	\$7,523,000
	\$3,423,000	\$4,100	
		,000	

IMPROVED PRACTICE BOMBING RELEASE SYSTEM--UNITED KINGDOM

The ML Aviation CBLIS-300 is an advanced practice bomb carrier that promises high reliability and significantly reduced maintenance burden over the current SUU-20

practice bomb dispenser used on F-15E, F-16, and F-111 aircraft. The CBL-300 design incorporates munitions ejector release units operated by a rechargeable cold gas system. A similar domestic system developed by Lucas Western is also being evaluated. Both designs eliminate the need for explosive pyrotechnic devices used in current practice bomb dispensers.

OSD approved the project in August 1992. Contract negotiations were completed during FY 1993 and test articles were delivered in August and November 1994. Testing is in progress at Eglin Air Force Base, Florida, with promising results to date. No additional funds were requested for this project for FY 1995.

FCT FUNDING	PRIOR	FY 1994	TOTAL
PROVIDED	YEAR(S)	\$1,100,00	\$2,500,000
	\$1,400,00	0	
	0		

K-36 EJECTION SEAT--RUSSIA

The Zvezda Design Bureau K-36 series of ejection seats are standard equipment in Russian high performance aircraft. The K-36D ejection seat is being evaluated in comparison with the performance characteristics of contemporary Air Force and Navy ejection seats to demonstrate fourth generation escape system technologies.

OSD approved this project in August 1992. High speed rocket sled tests were conducted at Armstrong Laboratory and at Holloman Air Force Base in February 1993. In May 1993, the first series of vertical catapult and wind tunnel tests started in Russia. In August 1993, flight testing was done using the MIG-25 flying laboratory at the Russian Flight Institute of Aviation Research with favorable results. Following analysis of test data in FY 1994, the K-36D was determined to be superior to western ejection seats at high speeds. The Air Force requested FCT funding for FY 1995 for followup tests but the funding was not approved.

FCT FUNDING	PRIOR	FY	TOTAL
PROVIDED	YEAR(S)	1994	\$3,770,000
	\$1,746,000	\$2,030	
		,000	

ARC HEATER MANIFOLD--FRANCE

The Aerospatiale arc heater manifold combines and redirects super high energy output of multiple arc heaters to produce high temperature and pressure. These environments are required for testing advanced hypersonic propulsion systems, such as supersonic combustion ramjets.

OSD approved the project in August 1992. Arnold Engineering Development Center (AEDC), Tennessee, completed the first series of tests in July 1994. The final series of tests on the Aerospatiale JP200 multi-arc system were completed successfully in France in October 1994. The final data analysis and technical report is

nearly complete. The Air Force did not request FCT funds for FY 1995 for the project.

FCT FUNDING	PRIOR	FY	TOTAL
PROVIDED	YEAR(S)	1994	\$566,000
	\$537,000	\$29,00	
		0	

84MM CARL GUSTAF M3 WEAPON SYSTEM FOR AIR BASE DEFENSE-- SWEDEN

The Bofors AB Carl Gustaf M3 is a lightweight, reusable soldier-portable recoilless weapon system. The weapon uses a family of ammunition to defeat armored vehicles, enemy personnel, and fortifications. The Air Force is evaluating the system at Wright Laboratory, Wright-Patterson Air Force Base, Ohio, for potential use by Air Force Security Police.

OSD approved the project in August 1993 and a contract for test articles was awarded in September 1994. Testing

will begin in early 1995 at Eglin Air Force Base, Florida. OSD approved \$700,000 of funding to complete the project.

FCT FUNDING	PRIOR	FY 1994	TOTAL
PROVIDED	YEAR(S)	\$600,000	\$600,000
	0		

PRESSURE SENSITIVE PAINT (PSP) --RUSSIA

The Central Aerohydrodynamics Institute (TsAGI) is the developer of PSP. The luminosity of the paint varies with the static pressure of oxygen when it is illuminated with specific wavelengths of light. PSP has the potential to reduce the costs of wind tunnel pressure models by more than 80 percent per model by eliminating or greatly reducing requirements for complex internal pressure measurement instrumentation.

The project started in February 1994. Testing was completed at the TsAGI facility in Russia in November 1994 and further testing will be done in the spring of 1995 at AEDC. The Air Force did not request FCT funds in FY 1995 for this project.

FCT FUNDING	PRIOR	FY 1994	TOTAL
PROVIDED	YEAR(S)	\$275,000	\$275,000
	0		

**CLOSE AIR SUPPORT/ALL-UP-ROUND WARHEAD (UNITARY
WARHEAD) --FRANCE, ISRAEL**

The Matra Defense (France) and Rafael (Israel) blast-fragmentation penetrating warheads are being evaluated by Wright Laboratory and Eglin Air Force Base, Florida, to potentially meet the Joint Direct Attack Munition (JDAM) and/or the Joint Stand-Off Weapon (JSOW) unitary warhead requirements. The Matra defense candidate is a stepped-diameter warhead with an insensitive composite plastic-bonded explosive charge. The Rafael candidate is a

modified insensitive munition design of the I-800 (HAVE NAP) warhead that the Air Force successfully tested under the FCT program in FY 1992 and procured. The FCT evaluation is being conducted jointly with the Navy.

OSD approved the project in August 1993. Contracts for test articles were awarded to both manufacturers in September 1994. Test planning is underway. Test firings early are scheduled for 1996 at Eglin Air Force Base, Florida. OSD approved \$3,510,000 for FY 1995.

FCT FUNDING	PRIOR	FY 1994	TOTAL
PROVIDED	YEAR(S)	\$400,00	\$400,000
	0	0	

ELECTRONIC WARFARE MANAGEMENT SYSTEM (EWMS) --DENMARK

The Terma EWMS is a single programmable unit that can replace individual cockpit controls with a centralized control system for the electronic combat (EC) suite in F-16, A/OA-10, and C-130 aircraft. The system includes

up-front presentation of EC status, in-flight selection of chaff/flare dispenser programs, and full night vision goggle compatibility. EWMS features semiautomatic and automatic operation of the integrated EC suite. The system is in service on Royal Danish Air Force F-16 and C-130 aircraft.

OSD approved the project in October 1993. Test articles were delivered to the Air National Guard/Air Force Reserve Test Center, Tucson, Arizona. A/OA-10 testing is scheduled to start in early 1995. Testing on C-130 and F-16 aircraft will begin in the summer of 1995. If FCT testing is successful, the Air National Guard plans to procure the Danish EWMS in late FY 1995. OSD approved \$625,000 for FY 1995 for completion of the project.

FCT FUNDING	PRIOR	FY 1994	TOTAL
PROVIDED	YEAR(S)	\$500,00	\$500,000
	0	0	

NEW PROJECTS SELECTED FOR INITIATION IN FY 1995

The following FCT projects will begin evaluation in FY 1995.

**AUTOMATIC CHEMICAL AGENT DETECTOR ALARM (ACADA) --FINLAND,
GERMANY, UNITED KINGDOM**

OSD selected four NDI candidates to start evaluation in FY 1995. The project objective is to determine whether these items satisfy a joint Service requirement for the XM22 ACADA. ACADA will provide automatic blister agent and enhanced nerve agent detection capabilities to the Services. The candidates are manufactured by Honeywell (Germany), Graseby Ionics (United Kingdom), Environics Oy (Finland), Bruker-Franzen (Germany). FY 1995 FCT funding to be provided--\$3,715,000.

LESS THAN (LT) 3KW GENERATOR SET--CANADA

OSD selected a soldier-portable, diesel-fueled generator set to start evaluation in FY 1995. This set provides 120 volt 60 hertz alternating current (AC) and/or 28 volts direct current (DC) with a rated output of at least 1.5kW and less than 3kW. The set is manufactured by Mechtron Energy. The evaluation will determine whether the generator set meets Army Mobile Electric Power (MEP) requirements as a possible replacement for gasoline generators that are currently in the field. FY 1995 FCT funding to be provided--\$505,000.

**INTERIM VEHICLE-MOUNTED METALLIC MINE DETECTOR--SOUTH
AFRICA, AUSTRIA**

OSD selected two land mine detection vehicle systems to start evaluation in FY 1995. The Army has a requirement for a Ground Stand-off Minefield Detection System that can detect and avoid mines emplaced along lines of communication. The two systems are manufactures by Darbyl of South Africa and Schiebel Electronics of Austria. FY95 FCT funding to be provided--\$200,000.

RAAWS AMMUNITION UPGRADES (CARL GUSTAF M3) --SWEDEN

OSD selected the Bofors AB high explosive and HEAT round fuse upgrades and the full caliber TPT 141 training round for evaluation in FY 1995. The objective is to determine if the ammunition meets a joint Service requirement to upgrade the RAAWS ammunition. RAAWS was previously evaluated by the FCT Program and was type-classified and fielded by the 75th Ranger Regiment. FY 1995 FCT funding to be provided--\$1,622,000.

OMEGA M127 ELECTRONIC TIME DISTANCE FUZE--ISRAEL

The Reshef Technologies Omega Electronic Time/Distance Fuze was retrofitted into M494-105mm Antipersonnel

(APERS) tank rounds procured by Israeli Defense Forces. The project objective is to determine whether the Israeli fuze can replace the unreliable M571 fuze used in U.S. APERS rounds. These rounds are currently fired in XM-8 Armored Gun Systems and Abrams Main Battle Tanks. FY 1995 FCT funding to be provided--\$285,000.

**SMALL PROJECTED LINE CHARGE (SAPLIC) --UNITED KINGDOM,
ISRAEL, GERMANY**

OSD selected four antipersonnel minefield breaching devices for out-of-cycle evaluation in FY 1995. These devices can be used by combat engineers, infantry, special operations forces, and military police. The objective is to determine whether these devices meet an Army requirement for the SAPLC. The candidates are manufactured by Pains-Wessex Schermuly (United Kingdom), Royal Ordnance (United Kingdom), Israel Military Industries, and Comet GmbH (Germany). FY 1995 FCT funding to be provided--\$1 million.

DYAD MAGNETIC SWEEP--AUSTRALIA

OSD selected a naval mine warfare magnetic sweep developed by Australian Defense Industries for evaluation in FY 1995. The Australian military uses this item with

a water-driven acoustic generator. The project objective is to determine whether DYAD can meet the Navy's requirement for sweeping influence sea mines in shallow water. FY 1995 FCT funding to be provided--\$825,000.

ACOUSTIC CLADDING UNDERWATER REPAIR SYSTEM--UNITED KINGDOM

OSD selected the UMC International for evaluation in FY 1995. The candidate allows trained divers to permanently repair and replace submarine hull silencing tiles. The project objective is to determine whether the system meets Navy requirements for submarine hull maintenance. The potential exists for significant savings in submarine dry-docking and acoustic cladding costs. FY 1995 FCT funding to be provided--\$440,000.

BARRACUDA TARGET BOAT SYSTEM--CANADA

OSD selected the Bristol Aerospace Barracuda target boat for evaluation in FY 1995. Barracuda is a standard, recoverable 24-foot boat that is remote controlled. The project objective is to determine whether it meets mission performance standards required by the Navy AEGIS Program for seaborne targets. Barracuda will be compared

with the current QST-33 and QST-35 Navy surface targets.
FY 1995 FCT funding to be provided--\$395,000.

**MODULAR 5"/54 GUN SYSTEM (MGS) FOR DDG-51 CLASS SHIPS--
GERMANY**

OSD selected the Bloehm and Voss MGS for evaluation in FY 1995. The MGS includes a 5"/54 caliber gun that is manufactured in the United States by FMC. The module contains all gun/ship system interconnections and is fully outfitted with all ancillary equipment. The modular concept has significant cost advantages due to reduced outfitting, check-out time, and standardization. The project objective of the evaluation is to determine whether it meets Navy operational and ship construction requirements. FY 1995 FCT funding to be provided--\$1,180,000.

TERNAV LAND NAVIGATION SYSTEM--ISRAEL

OSD selected this hybrid, Inertial Dead Reckoning/GPS land navigation system for evaluation in FY 1995. The system was developed by Taman Precision Instrument Industries for ground vehicle applications. The project objective is to determine if TERNAN meets the Marine

Corps' requirement for the land navigation component of the AVENGER mobile land-air defense system. FY 1995 FCT funding to be provided--\$497,000.

**DESIGNATED MARKSMAN RIFLE (DMR) OPTICAL SIGHTING SYSTEM--
GERMANY, CANADA, AUSTRIA**

OSD selected three foreign-developed optical sighting systems to start evaluation in FY 1995. The project objective is to determine whether they meet the Marine Corps requirement for a DMR optical sighting system. The candidates are manufactured by Hensoldt & Sonne (Germany), and Schmidt & Bender (Germany), Hughes Leitz (Canada), and Kholes (Austria). FY 1995 FCT funding to be provided--\$72,000.

**LIGHTWEIGHT BLASTING MACHINE (LWBM) --UNITED KINGDOM,
CANADA**

OSD selected lightweight blasting machines for evaluation in FY 95. The LWBMs are portable firing devices manufactured by BDL Systems (United Kingdom) and Proparms (Canada). The objective is to determine whether these items meet a Marine Corps requirement for the blasting machine component of the MK155 Tractor-Mounted Mine Clearing Line Charge. FY 1995 FCT funding to be provided-\$103,000.

**MINIMUM OPERATING STRIP LIGHTING KIT (MOSKIT) --UNITED
KINGDOM**

OSD selected this strip lighting kit for evaluation in FY 1995. MOSKIT is a combat-proven, mobile lighting and visual landing aids package developed by Metalite Aviation Lighting. The project objective is to determine whether MOSKIT meets a Marine Corps requirement for a more mobile lighting system that is compatible with night-vision devices. MOSKIT is a potential replacement for current Naval Expeditionary Airfields lighting, which is not compatible with night-vision devices and requires

exorbitant embarkation space to deploy. FY 1995 FCT funding to be provided--\$63,000.

MSG 90 MILITARY SNIPER RIFLE--GERMANY

OSD selected the Heckler and Koch MSG 90 for evaluation in FY 1995 as a candidate for fielding in the Marine Corp's two-man sniper team. The weapon is a high precision, 7.62mm, 800-yard range semiautomatic rifle, which complements the M40A1 bolt action sniper rifle currently used. The project objective is to determine whether the MSG 90 meets the Marine Corps requirement for a Designated Marksman Rifle (DMR) to enhance Maritime Special Purpose Force sniper team lethality and survivability. A secondary objective is to determine if this rifle could provide Fleet Antiterrorist Security Teams the ability to accurately engage multiple, semiprotected targets in rapid succession. FY 1995 FCT funding to be provided--\$100,000.

M-31 SUPERSONIC SEA SKIMMING TARGET (SSST)--RUSSIA

OSD selected the M-31 SSST for evaluation in FY 1995. This target is manufactured by the Zvezda Experiment and

Design Bureau and is used by the Russian Air Force. The project objective is to see if SSST can meet Navy requirements for a target that simulates the low altitude and speed characteristics of current antiship missile threats. FY 1995 FCT funding to be provided--\$3,432,000.

ADVANCED SHORT RANGE AIR-TO-AIR MISSILE (ASRAAM) --UNITED KINGDOM

OSD selected the BAe ASRAAM for evaluation in FY 1995. The project objective is to determine if the United Kingdom missile is a viable candidate for the U.S. AIM-9X Missile Engineering, Manufacturing Development Program. FY 1995 FCT funding to be provided--\$6,107,000.

40MM L60/L70 ADVANCED GUN SYSTEM FOR AC-130 GUNSHIPS-- SWEDEN

OSD selected the L60/L70 Gun System and associated improved ammunition for evaluation in FY 1995. The project objective is to determine if the system can meet the Air Force Special Operations Command requirement for enhanced lethality of the current AC-130 gunship weapons suite against a range of targets. FY 1995 FCT funding to be provided--\$500,000.

MULTISCANNER FOR AGING AND SURVEILLANCE--GERMANY

OSD selected this scanner for evaluation in FY 1995.

The Fiedler Optroelektronik Multiscanner provides detailed surface deformation data on test specimens or a portion of deployed hardware. The multiscanner obtains surveillance information for solid rocket motors and ballistic missile systems not available by other techniques. The system is used in Germany to measure stress-strain effects on JANNAF uniaxial test specimens. The project objective is to determine whether the multiscanner meets Air Force diagnostic requirements for missile propulsion replacement programs. FY 1995 FCT funding to be provided--\$110,000.

APPENDIX

EQUIPMENT SELECTED FOR PROCUREMENT

BY THE SERVICES

AS A RESULT OF THE FCT PROGRAM

1980-1994

EQUIPMENT SELECTED FOR PROCUREMENT BY THE ARMY, 1980-1994

UIPMENT	COUNTRY	MANUFACTURER	YEAR
zzle Velocity System	Israel	Reshef	1994
mm HEDP Round for Carl Gustaf RAAWS	Sweden	Bofors	1994
proved Chemical Agent Monitor	United Kingdom	Graseby Ionics	1993
WK Battery Loader-Transporter dification Kits	Belgium	Thyssen Nordseewerke	1993
mm Mortar Training Cartridges	Israel	Salgad/Pocal	1993
mm TPGID HEAT Rounds	Germany	Diehl	1991
rl Gustaf M3 (RAAWS)	Sweden	Bofors	1990
C Reconnaissance Vehicle (NBCRS)	Germany	Thyssen Henschel	1990
CRS Mass Spectrometer	Germany	Bruker Franz/Diehl	1990
gital Signal Processor	Denmark	Weibel	1990
5mm Lightweight Howitzer	United Kingdom	Royal Ordnance	1988
5mm Tank Training Ammunition	Germany	Rheinmetall	1986
proved 81MM Mortar	United Kingdom	Royal Ordnance	1986
NATOR Decontamination Unit	Norway	Karl H. Hoie/EASI	1986
mm Mortar Training Cartridge	Israel	Salgad/Pocal	1985
0mm Mortar (Tampella)	Israel	Soltam	1985
emical Agent Monitor	United Kingdom	Graseby Ionics/ETG	1985
table Water Tank	United Kingdom	Airborne Industries	1984
56mm Plastic Trng Ammunition	Germany	Dynamit-Nobel	1984
2" Mortar Training Devices/Rds	Germany	Nico Pyrotechnik	1983
0 Cal. Plastic Trng Ammunition	Germany	Dynamit-Nobel	1983
all Unit Support Vehicle	Sweden	Haaglands & Soner	1983
2 Cal. Tank Training Ammunition	United Kingdom	EMI Eley	1982
C Marking Set	Germany	A. Diedr Dolmeyer	1981
2A3 LAW Anti-Tank Weapon	Norway	Raufoss	1981

mbat Support Boat	United Kingdom	Fairey Allday Marine	1981
ansporter Vehicle	Germany	MAN	1981

**UIPMENT SELECTED FOR PROCUREMENT BY THE NAVY AND
RINE CORPS, 1980-1994**

UIPMENT	COUNTRY	MANUFACTURER	YEAR
gh Pressure Pure Air Generator	United Kingdom	Ultra Electronics	1994
L Chaff Dispenser	Sweden	Nobel Tech	1993
pressed Current Cathodic Protection stem	United Kingdom	Widney Aish	1993
rcraft Cockpit Canopy Covers	United Kingdom	Colebrand	1993
rial Target Vector Scoring	United Kingdom	Cambridge Consult	1993
racel Transportable Recompression amber	Australia	Cowan Manufacturing	1993
F Traveling Wave Tubes	Germany	Siemens	1992
rpedo Guidance, MK48 HOSEPIPE	United Kingdom	Marconi Underwater	1992
mote-Controlled Minesweeper	Sweden	Karlskronavarvet	1991
rtable Infantry Target System	United Kingdom	BDL	1991
nguin Missile & Guidance Unit	Norway	Norsk Teknologi	1991
frared Imaging System	Israel	El-Op/Tadiran	1991
ti-Magnetic Mine Actuating Device	Israel	Israel Aircraft Ind	1990
M-1 Tactical Displays (AIOS)	United Kingdom	Plessey Naval System	1990
ghtweight CB Protective Garment	United Kingdom	Compton-Webb	1990
ght Attack Avionics TICM FLIR with Thermal Cueing Unit Night Vision Goggles (Cats Eyes)	United Kingdom	GEC Avionics	1990
6 Raster Head-Up Display (HUD)	United Kingdom	GEC Avionics	1989
ritime Decoy (Rubber Duck)	United Kingdom	Irvin Industries	1988

W Acoustic Processor	Canada	Computing Devices	1988
2C Multifunction Display Control	Canada	Marconi of Canada	1988
rsatile Exercise Mines (VEMS)	United Kingdom	British Aero/Plessey	1987
0 Cal. Multipurpose Ammunition	Norway	Raufoss	1981
tegrated Communications System I	United Kingdom	Marconi	1980

UIPMENT SELECTED FOR PROCUREMENT BY THE AIR FORCE,
80-1994

EQUIPMENT	COUNT RY	MANUFACTURER	YEAR
Enhanced Electronic Warfare Scenario Generator (E-EWSG)	Unite d Kingd om	Data Sciences	1994
Pylon Integrated (Chaff/Flare) Dispenser System (PIDS-3)	Denma rk	Per Udsen	1993
40mm HEI Cartridge and LI-465 Fuzes for AC-130 Gunship	Swede n	Bofors	1993/ 1994
I-800 (HAVE NAP) Warhead	Israe l	Israel Military Industries	1992
SPOT Satellite Digital Imagery	Franc e	Spot Image Corporation	1990
ALe-40 Digital Sequencer Switch	Denma rk	Terma	1990
Chemical Defense Equipment	Germa ny	Blucher/Celanes e	1990
Millimeter Wave Communications	Japan	Nippon Electric	1989
Dielectric Measurement Equipment	Franc e	Aerospatiale	1989
HAVE NAP Air-to-Surface Weapon	Israe l	Rafael	1989
Munitions Ejector Release Unit	Germa ny	ALKAN/EDO	1986
Rapid Runway Repair Equipment	Multi natio nal	NL, FR, GE Companies	1985

Durandal Runway Attack Weapon

Franc
e

Matra

1983

APPENDIX B

EQUIPMENT SELECTED OR TARGETED FOR USE IN DESERT STORM

An advantage of the Foreign Comparative Testing (FCT) Program is that it makes additional equipment available during times of crisis to support the U.S. warfighter and its allies. The following list itemizes systems that were tested by the FCT Program and were either fielded or targeted for fielding when the military action was concluded.

Program: Army NBC Reconnaissance Vehicle

FCT Cost: \$7.1 million

Country/Mfr: Germany/Thyssen-Henschel

Description: This vehicle was used in Desert Storm of operations to check for NBC contamination. The U.S. Army purchased 23 systems. Germany contributed 30 additional systems.

Program: NBC Reconnaissance Equipment-MMI Mass Spectrometer

FCT Cost: \$1.9 million

Country/Mfr: Germany/Bruker-Franzen GmbH

Description: The MMI Mass Spectrometer was the primary detection and analysis equipment in the NBC Reconnaissance Vehicle. During the ground phase of the Gulf War, the spectrometer provided assurance that chemical agents, if employed, would be detected.

Program: Chemical Agent Monitor, Improved (I-CAM)

FCT Cost: \$1.04 million

Country/Mfr: United Kingdom/Graseby Dynamics

Description: This hand-held monitor was used at the unit level to detect the presence of blister and nerve agents. It provided additional assurance that agents would be detected if employed.

Program: Reverse Osmosis Water Purification System

FCT Cost: \$565,000

Country/Mfr: United Kingdom/Stella-Meta Filters and
Australia/MEMTEC, Ltd

Description: This is a water purification system was used by U.S. combatants to assure the quality of consumable water.

Program: Self-propelled Acoustic-magnetic Minesweep (SAM)

FCT Cost: \$6.87 million

Country/Mfr: Sweden/Karlskronavarvet

Description: This system provided a remotely operated minesweeping capability to detect mines from a distance, providing assurance that mines could be safely located and destroyed. SAMs were used during and after the Gulf War to clear enemy mines, especially in shallow water.

Program: SPOT Satellite Digital Imagery

FCT Cost: \$4.6 million

Country/Mfr: France/SPOT Image Corporation

Description: In cooperation with France, the SPOT satellite was re-oriented to concentrate its mapping capabilities on the Persian Gulf area. The images it transmitted were processed through the United States Air Force Mission Support System II and distributed to flying squadrons. In some cases, the SPOT photos were the only images allied pilots had prior to launching their attack missions.

Program: Chemical Defense Equipment - Aircrew Protective Suits

FCT Cost: \$42 million (Total program cost estimate)

Country/Mfr: Germany/Blucher GmbH

Description: These protective suits for aircrews provided better protection, more comfort, and greater thermal efficiency than previously used suits. Gulf War use resulted in 50 percent reduction in thermal stress to pilots.

Program: Antimagnetic Mine Actuating Device (AMMAD)

FCT Cost: \$1.1 million

Country/Mfr: Israel/Israeli Aircraft Industries

Description: AMMAD provided a new capability for ensuring that land mines were cleared prior to the employment of troops. The system was used during Desert Storm with both M60 Tanks and M1 Main Battle Tanks.

Program: Portable Target Scoring System

FCT Cost: \$275,000

Country/Mfr: United Kingdom/BDL Systems, Ltd.

Description: This system was used for marksmanship training for infantry Marines in the field during Desert Storm and proved to be effective in maintaining proficiency.

Program: Versatile Exercise Mine System (VEMS)

FCT Cost: \$2.4 million

Country/Mfr: United Kingdom/British Aerospace/Plessey

Description: VEMS mimics threat mines and allowed minesweeping training to be conducted with more realism and safety.

Program: Lightweight Chemical/Biological Overprotection Garment

FCT Cost: \$693,000

Country/Mfr: United Kingdom/J. Compton Sons and Webb, Ltd.

Description: These suits provided infantry Marines self-protection against potential chemical and/or biological warfare attacks.

Program: H-3 Composite Rotor Blades

FCT Cost: \$932,000

Country/Mfr: United Kingdom/Westland Helicopter

Description: Composite rotor blades were found to withstand the desert sand environment better than metal rotor blades. After the war, the U.S. Navy decided to use the composite blades to replenish existing stocks.

Program: Delta-K Earth Penetrating Radar

FCT Cost: \$149,000 (Estimated).

Country/Mfr: Norway/SUSAR

Description: The Delta-K Earth Penetrating Radar was thought to have the potential to detect underground targets, such as bunkers. FCT Program testing in the United States was accelerated to meet the combat situation, but the radar did not satisfy U.S. requirements.

Program: Communications Aural Protective System (CAPS)

FCT Cost: \$189,000

Country/Mfr: United Kingdom/RACAL Acoustics

Description: FCT testing of these headsets was accelerated in anticipation of a successful outcome and fielding for use in Desert Storm operations; however, CAPS did not fully meet Army requirements and was not procured.